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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/749,802	12/31/2003	Yan Zhou	75622P006601	5341
22503	7590	05/17/2006	EXAMINER	
DAVIS & ASSOCIATES P.O. BOX 1093 DRIPPING SPRINGS, TX 78620			SINGH, RAMNANDAN P	
			ART UNIT	PAPER NUMBER
			2614	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/749,802

Applicant(s)

ZHOU, YAN

Examiner

Ramnandan Singh

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 8 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 9-16, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimoto et al [US 4,866,767] in view of Anderson [US 20040124996 A1].

Regarding claim 1, Tanimoto et al teach a subscriber line driver apparatus shown in Fig. 3, comprising:

an impedance bridge comprising a first impedance NZT (11) , a second impedance MZB (12), and a capacitor C (28), and coupled to a subscriber line; and

a first pair of current drivers (1, 2) coupled to the impedance bridge for driving a voice signal in a first frequency range (i.e. audio band) onto the subscriber line [Figs. 1-8; col. 4, line 45 to col. 6, line 12].

Tanimoto et al do not teach expressly using current drivers for driving a data signal in a second frequency range onto the subscriber line.

Anderson teaches using current drivers for driving a data signal in high frequency bands including ADSL and HDSL [Fig. 2; Para: 0003; 0099-0103; 0169-0198].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Anderson with Tanimoto et al in order to use a second pair of current drivers coupled to the impedance bridge to transmit data signals at high speeds [Anderson; Para: 0002-0003].

Further, the recitation  $Z1 + Z2$  in claim # 1 is considered as an identification only, and does not constitute a limitation until they are defined in dependent claims.

Claim 10 is essentially similar to claim 1 and is rejected for the reasons stated above.

Regarding claim 4, Tanimoto et al further teach the subscriber line driver, wherein the first frequency range (i.e. voice frequency) has an upper bound of approximately 4 kHz [col. 4, lines 45-46].

Claim 13 is essentially similar to claim 4 and is rejected for the reasons stated above.

Regarding claim 5, Anderson further teaches the apparatus, wherein the second frequency range (i.e. ADSL) includes a lower bound greater than 25 kHz [Para: 0003 ].

Claim 14 is essentially similar to claim 5 and is rejected for the reasons stated above.

Regarding claim 6, Anderson further teaches the subscriber line driver, wherein the ADSL includes discrete multi-tone encoded signals [Para: 0003].

Claim 15 is essentially similar to claim 6 and is rejected for the reasons stated above.

Regarding claim 7, Anderson further teaches the apparatus, wherein the impedance bridge comprises a first impedance NZT (11) , a second impedance MZB (12), and a capacitor C (28) [Fig. 3].

Regarding claims 16 and 18, the limitations are shown above.

Regarding claim 9, Tanimoto et al further teach the apparatus, comprising:  
an impedance synthesis circuit providing an impedance synthesis feedback signal to the first pair of current drivers [Fig. 3], wherein within the first frequency range

the output impedance across the subscriber line is controlled by the impedance synthesis circuit [col. 2, line 62 to col. 3, line 53; col. 5, line 34 to col. 6, line 22].

Regarding claim 2, although Tanimoto et al teach a method for determining a value of  $NZT + MZB$  for a specific configuration of the impedance synthesis circuit [Figs. 3-4; col. 5, line 34 to col. 6, line 12; col. 9, line 34 to col. 12, line 59], they do not teach expressly the numerical value of the combined impedance  $ZT + ZB$ . However, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to determine the values of  $NZT + MZB$  of the impedance synthesis circuit for a specific configuration in order to accommodate the operation of the two current sources in the voice band subject to circuit, system and design constraints.

Claim 11 is essentially similar to claim 2 and is rejected for the reasons stated above.

Regarding claim 3, Tanimoto et al teach the apparatus, wherein  $ZT$  approximately equals  $ZB$  for impedance balancing and reduced distortion [col. 9, lines 11-56].

Claim 12 is essentially similar to claim 3 and is rejected for the reasons stated above.

***Allowable Subject Matter***

3. Claims 8 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 8 identifies the uniquely distinct feature of a subscriber line driver apparatus, wherein a tip line of the subscriber line and one of the second pair of current drivers is connected to a first terminal of Z1, wherein a first terminal of C1 and one of the first pair of current drivers is connected to a second terminal of Z1, wherein the other of the second pair of current drivers is connected to a first terminal of Z2, wherein the other of the first pair of current drivers and a second terminal of C1 are connected to a second terminal of Z2. As such, claim 8 requires a unique configuration of the subscriber line driver as given here. While the closest prior art, Tanimoto et al [US 4,866,767] and Anderson [US 20040124996 A1] each teach providing configurations having current drivers, Tanimoto et al providing a configuration having current drivers for driving voice signals, and Anderson providing a configuration having current drivers for driving a data signal; neither Tanimoto et al nor Anderson show or suggest to provide the configuration having current drivers as claimed. As such, the prior art,

either singularly or in combination, fail to anticipate or render the above underlined limitation obvious.

Therefore, claim 8 is indicated allowable.

Claim 17 is essentially similar to claim 8 and hence claim 17 is also indicated allowable.

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Breamer et al [US 6,782,096 B1] teach a subscriber line driver (SLD) for both POTS signals and DSL signals using current drivers [Figs. 2, 5A, 6; col. 4, lines 13-16; col. 4, line 31-34; col. 5, lines 18-25; col. 4, lines 43-48; col. 11, lines 15-27; col. 11, line 31 to col. 12, line 16];

(ii) Bingel [US 5,999,619] teaches a method for a synthetic termination input impedance to a current driven data communication [Figs. 1-5; Abstract]; and

(iii) Hanneberg et al [US 20040257114 A1] teach a line driver for data communication at high bit rates [Figs. 1-4; Abstract].

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh  
Examiner  
Art Unit 2614

A handwritten signature in black ink, appearing to be 'R Singh', with a long horizontal stroke extending to the right.